Most-potential Non-Conventional Energy Sources

4802. SHRI RAJNATH SINGH SURYA: Will the Minister of NON-CONVENTIONAL ENERGY SOURCES be pleased to state:

(a) what percentage of our total consumption of energy comes from the non-conventional energy sources;

(b) whether there was a decrease or increase during the last decade;

(c) the reasons for the increase / decrease; and

(d) which is the most-potential non-conventional sources in India?

THE MINISTER OF STATE OF THE MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES (SHRI M. KANNAPPAN): (a) The total installed capacity of renewable energy is about 1700 MW till 31.3.2000, which is 1.75 per cent of the total installed capacity in the country.

(b) and (c) Power generation from renewables was on an increase during the last decade. This became possible mainly through the promotional policies of the Ministry including fiscal and financial incentives provided by the Ministry, institutional support and policies for attracting private investments for commercial projects. Besides, renewable energy technologies are eco-friendly and environmentally benign.

(d) Solar energy potential in the country is very high. Besides, small hydro power, biomass and wind energy are also having significant potential in the country.

Potential of Non-Conventional Energy Sources

4803. SHRI B.J'PANDA: Will the Minister of NON-CONVENTIONAL ENERGY SOURCES be pleased to state:

(a) whether Government have made any assessment on the potential of non-conventional sources of energy;

(b) if so, the details thereof alongwith the efforts made to tap the resources, State-wise;

(c) the targets set thereon for the Ninth Plan;

(d) the specific programme drawn up thereon for Orissa;

(e) the funds earmarked for generating power through non-conventional sources in Orissa and in other States; and

(f) the source-wise separate break-up thereof?

THE MINISTER OF STATE OF THE MINISTRY OF NON-CONVENTIONAL ENERGY SOURCES (SHRI M. KANNAPPAN): (a) and (b) On the basis of various studies sponsored / undertaken by the Government on a country-wide basis, the estimated broad potential of various Non-conventional Energy Sources in the country is given in Statement-I (See below). Details of State-wise achievements made under various Non-Conventional Energy programmes / schemes till 31st March, 2000 are given in Statement-II (*See* below)

(c) The physical targets fixed under various Non-Conventional Energy Programmes during the Ninth Five Year Plan period are given in Statement III. (See below)

(d) to (f) The Ministry does not allocate State-wise physical and financial targets for major Non-Conventional Energy programmes except biogas, improved chulha and solar photovoltaics for which targets are being finalised for the year 2000-2001. The State-wise central financial assistance provided under major Non-conventional Energy programmes during the Ninth Plan period including the State of Orissa is given in Statement IV.

STATEMENT-I

Details of estimated potential in the Renewable Energy Sector in the country

	Source / System	Estimated Potential
1.	Biogas plants (No.)	120 lakh
2.	Improved Chulha (No.)	12 crores
3.	Biomass Power	17.000 MW
4.	Bagasse based Cogeneration	3500 MW
5.	Solar Photovoltaic	20 MW / sq.km.
6.	Solar Thermal	35 MW / sq.km.
	Solar Water Heating Systems	30 million square meter collector area
7.	Wind Power	45,000MW
8.	Small Hydro Power	10.000 MW
9.	Energy Recovery from wastes	1700 MW
	MW = Mega-watt	Sq. Km. = Square Kilometer

STATEMENT-II

State-wise Cumulative Physical Achievements made under major non-conventional energy programmes as on 31-3-2000.

Sl. No.	States/UT	Bio-Gas	Improved Chulha	SHP	Wind	Biomass Power	Solar Photovoltaic SLS	HLS	SL	Solar Cooker	Biomass Gasifiers	SADP Energy Parks	IREP	U&I
		(Nos.)	Nos. in	(MW)	(MW)	(MW)	(Nos.)	(Nos.)	(Nos.)	(Nos.)	(in KW)	(Nos.)	(Nos.)	(MW)
1.	Andhra Pradesh	273019	34.67	34.31	88.04	12	3217	1150	14401	11778	13634	12	32	7.7
2.	Arunachal Pradesh	631	0.33	21.05	0	0	738	650	4437	530	180	4	10	0
3.	Assam	35816	5.31	2.2	0	0	98	1666	475	80	23	11	21	0
4.	Bihar	111422	11.42	0.05	0	0	673	456	41949	730	20	10	56	0
5.	Goa	3145	1.17	0.05	0	0	31	31	51	1417	22	1	5	0
6.	Gujarat	331642	13.29	2.00	166.91	0.5	1584	840	14808	47908	3921	7	25	2
7.	Haryana	39373	9.87	0.2	0	4	1030	2939	20922	17752	964	8	38	0
8.	Himachal Pradesh	42119	6.6	11.6	0	0	844	6843	17248	25616	7	9	45	0
9.	Jammu & Kashmir	1759	4.14	8.37	0	0	389	10169	5225	345	120	4	28	0
10.	Karnataka	263621	14.56	25.35	34.22	37	516	28	898	250	3699	10	42	1
11.	Kerala	57231	8.67	5.52	2.025	0	675	2498	31386	194	615	11	44	0
12.	Madhya Pradesh	169780	29.01	5.66	22.58	5	5554	149	7601	181000	4429	10	85	2.7

Sl. No.	States/UT	Bio-Gas	Improved Chulha	SHP	Wind	Biomas Power	Solar Photovoltaic SLS	Solar Photovoltaic HLS	Solar SL	Solar Cooker	Biomass Gasifiers	SADP Energy Parks	IREP	U&I
		(Nos.)	Nos. in laks	(MW)	(MW)	(MW)	(Nos.)	(Nos.)	(Nos.)	(Nos.)	(in kW)	(Nos.)	(Nos.)	(MW)
13.	Maharashtra	641143	22.92	7.03	79.28	9	3045	226	5268	52017	3323	12	37	0
14.	Manipur	1756	0.65	4.1	0	0	370	50	3400	365	0	10	19	0
15.	Meghalaya	989	0.18	1.51	0	0	593	320	3200	1164	0	0	16	0
16.	Mizoram	2066	0.47	11.76	0	0	315	1645	3539	118	0	7	11	0
17.	Nagaland	1032	0.26	3.87	0	0	271	8	0	0	0	5	25	0
18.	Orissa	156738	17.63	1.26	1.1	0	5482	1064	5105	2981	72	4	45	0
19.	Punjab	55683	11.07	9.9	0	10	955	2200	10265	17219	660	11	40	0.75
20.	Rajasthan	65457	25.45	4.85	2	0	6685	15647	4624	36016	218	4	36	0
21.	Sikkim	2445	0.68	9.25	0	0	127	160	320	20	0	0	4	0
22.	Tamil Nadu	196413	26.11	6.7	770.73	94	2071	21	5203	1355	853	9	21	0.06
23.	Tripura	1015	0.53	1.01	0	0	340	1478	6895	68	0	3	6	0
24.	Uttar Pradesh	331339	37.04	31.39	0	50.5	708	57105	56288	39873	511	5	115	1
25.	West Bengal	160726	29.6	7.98	0	0	1264	8942	3271	5575	530	4	34	0
26.	Andaman & Nicobar	137	0.31	0	0	0	334	390	434	59	167	4	5	0
27.	Chandigarh	97	0.19	0	0	0	0	100	775	1523	0	3	1	0
28.	Dadar & Nagar Haveli	168	0.13	0	0	0	0	0	0	81	0	0	1	0

29.	Daman & Diu	0	0.01	0	0	0	0	0	0	0	0	0	1	0
30.	Delhi	671	2.66	0	0	0	301	0	4753	27990	74	9	5	0
31.	Lakshwadeep	0	0.05	0	0	0	704	0	5060	0	0	0	1	0
32.	Pondicherry	539	0.36	0	0	0	2	0	531	88	0	2	2	0
33.	Others	0	4.37	0	0.465	0	0	0	0	7000	318	0	0	0
	TOTAL:	2947973	319.71	216.97	1167.35	222	38916	116775	278332	481112	34360	189	860	15.21

SHP = Small Hydro Power,
MW = Mega Watt, kW | Kilo Watt,
U&I = Urban & Industrial Waste Energy

SLS = Street Lighting system, HLS = Home Lighting System, SL = Solar Lanterns
IREP = Integrated Rural Energy Programme,
MW = Mega Watt, kW | Kilo Watt,

STATEMENT-III

Details of programme-wise Physical Target Planned during Ninth Five Year Plan period

Sl. No.	Programmes/Schemes	9th Plan Physical Target
1	Biogas	10 Lakhs
2	Community/Institutional/Night-soil based Biogas Plants	800Nos.
3	Improved chulha	150 lakhs
4	Biomass/Gasifier	40 MW
5	Integrated Rural Energy Programme (IREP)	660 (Old Blocks) 200 (New Blocks)
6	Solar Photovoltaic (SPV) Demonstration	
	SPV Home Light	2 Lakhs
	SPV Lanterns	3 Lakhs
	SPV Power Plants	1.6 MW
7	SPV Pumps	4000 Nos.
8	Solar Thermal (ST) Energy	
	Solar Water Heating Systems (M.Sq. collector area)	1.5 Lakhs
	Solar Cooker	1.5 Lakh Nos.
9	Wind Pumps & Hybrid Systems	1000 Nos.
		250 KW
10	Wind power	1000 MW
11	Small Hydro Power (SHP)	130 MW
	(Water Mills)	700 Nos.
	(Repair & Maintenance)	65 MW
12	Biomass Power	314 MW
13	Solar Power	141.5 MW
14	Urban & Industrial & National Bio-energy Board	42 MW

MW = Mega Watt; KW = Kilo Watt; M.Sq.= Meter Square

STATEMENT-IV

The details of Central Financial Assistance provided to the States under major programmes of Non-conventional energy sources during Ninth Plan period

(Rs. in crores)

Sl. No.	States/UTs	Funds Released (as on 31.12.99)
1	Andhra Pradesh	18.41
2	Arunachal Pradesh	8.14
3	Assam	2.19
4	Bihar	3.34
5	Goa	0.95
6	Gujarat	13.33
7	Haryana	5.10
8	Himachal Pradesh	11.72
9	Jammu & Kashmir	2.97
10	Karnataka	17.43
11	Kerala	3.51
12	Madhya Pradesh	17.53
13	Maharashtra	14.66
14	Manipur	2.19
15	Meghalaya	0.89
16	Mizoram	12.84
17	Nagaland	0.89
18	Orissa	10.62
19	Punjab	9.55
20	Rajasthan	8.12
21	Sikkim	5.95
22	Tamil Nadu	6.92
23	Tripura	1.59
24	Uttar Pradesh	26.89
25	West Bengal	15.04
26	Andaman & Nicobar	0.22
27	Chandigarh	0.31
28	Dadar & Nagar Haveli	0.02
29	Daman & Diu	0.03
30	Delhi	0.74
31	Lakshwadeep	0.57
32	Pondicherry	0.16
33	Others	11.87